Nursing level III

NTQF Level III

Learning Guide # 21

Unit of Competence: Transporting and Assisting Patient by Safe Handling Practice
Module Title: Transporting and Assisting Patient by Safe Handling Practice
LG Code: ---HLT NUR3 M05 LO2 LG-19
TTLM Code: -- HLT NUR3 M05 0219 V1

LO 2: Utilize and implement strategies as directed to improve workplace organization

Instruction Sheet	Learning Guide #2

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics –

- OHS hazards
- workplace design and task analysis
- Workplace policies and procedures

Learning Instructions:

1. Read the specific objectives of this Learning Guide.

2. Follow the instructions described in number 3 to 19.

3. Read the information written in the “Information Sheets 1”. Try to understand what are being discussed. Ask your trainer for assistance if you have hard time understanding them.

4. Accomplish the “Self-check 1” in page 9.

5. Ask from your trainer the key to correction (key answers) or you can request your trainer to correct your work. (You are to get the key answer only after you finished answering the Self-check 1).

6. If you earned a satisfactory evaluation proceed to “Information Sheet 2”. However, if your rating is unsatisfactory, see your trainer for further instructions.

7. Submit your accomplished Self-check. This will form part of your training portfolio.

8. Read the information written in the “Information Sheet 2”. Try to understand what are being discussed. Ask your trainer for assistance if you have hard time understanding them.

9. Accomplish the “Self-check 2” in page 17.

10. Ask from your trainer the key to correction (key answers) or you can request your trainer to correct your work. (You are to get the key answer only after you finished answering the Self-check 2).

11. Read the information written in the “Information Sheets 3 and 4”. Try to understand what are being discussed. Ask your trainer for assistance if you have hard time understanding them.

12. Accomplish the “Self-check 3” in page 24.

13. Ask from your trainer the key to correction (key answers) or you can request your trainer to correct your work. (You are to get the key answer only after you finished answering the Self-check 3).

14. Accomplish the "Self-check 3" in page 37.

15. Ask from your trainer the key to correction (key answers) or you can request your trainer to correct your work. (You are to get the key answer only after you finished answering the Self-check 4).

16. If you earned a satisfactory evaluation proceed to "Operation Sheet 1" in page 12, "Operation Sheet 2" in page 20 and "Operation Sheet 4" in page 38,. However, if your rating is unsatisfactory, see your trainer for further instructions.

17. Read the "Operation Sheet 1, 2 and 3" and try to understand the procedures discussed.

18. Go to your trainer if you need clarification or you want answers to your questions or you need assistance in understanding a particular step or procedure.

19. Do the "LAP test" in page 51 (if you are ready). Request your trainer to evaluate your performance and outputs. Your trainer will give you feedback and the evaluation will be either satisfactory or unsatisfactory. If unsatisfactory, your trainer shall advice you on additional work. But if satisfactory you can proceed to Learning Guide # 3.

2.1 Occupational Health and Safety Hazards

According to WHO (1995), occupational safety and health can be defined as a multidisciplinary activity aiming at:

- ✓ Protection and promotion of the health of workers by eliminatingoccupational factors and conditions hazardous to health andsafety at work
- ✓ Enhancement of physical, mental and social well-being ofworkers and support for the development and maintenance oftheir working capacity, as well as professional and social development at work
- ✓ Development and promotion of sustainable work environmentsand work organizations

The ILO/WHO definition of occupational health is "The promotionand maintenance of the highest degree of physical, mental socialwell- being of workers in all occupation" and the WHO considersoccupational health service to be responsible for the total of workerand, if possible, his or her family.

Occupational Health: is an aspect of Environmental Health, which concerns itself with the interaction between the workplace and the health of the worker.

Key Focus: Work to help employers provide a safe working environment for all employees

What is Hazard?

There are many definitions for hazard but the most common definition when talking about workplace health and safety is "A hazard is any source of potential damage, harm or adverse health effects on something or someone."

OHS Services:

- Identifies and assesses risks from health hazards in the workplace
- Provides advice, information, training and education on occupational health, safety and hygiene and on ergonomics and protective equipments

- Conducts surveillance of workers' health in relation to work
- Contributes to occupational rehabilitation
- Organizes first aid and emergency treatment

Healthcare hazards

More than 11 million healthcare workers are employed in the United States, constituting about eight percent of the entire workforce. These workers represent many different occupations that expose them to a variety of hazards.

- ✓ More than 250,000 health care workers are injured on the job each year.
- ✓ Health care industry spends more than $20 billion annually in workers' compensation and related costs due to employee injuries and illnesses.

For example, nurses confront such potential hazards as exposure to infectious diseases and toxic substances, back injuries, radiation exposure and stress. Housekeepers may be exposed to cleaners and disinfectants that can cause rashes and eye and throat irritation and to infectious diseases such as hepatitis from hypodermic needles that have not been properly discarded. Maintenance workers might have to confront electrical, asbestos and solvent hazards.

Despite this diversity of occupations and exposures, healthcare hazards can be divided into four categories:

- ✓ hazardous agents
- ✓ ergonomic hazards
- ✓ physical hazards
- ✓ Psychological hazards.

➢ **Hazardous agents**

- Hazardous agents include:-**biological agents**, **chemical agents**, **disinfectants** and **sterilants**, **antibiotics**, **hormones**, **antineoplastics**, **waste anesthetic gases**, **latex gloves, aerosolized medications (e.g., ribavirin) and hazardous waste**.

- Healthcare employees will find these hazardous agents almost everywhere they turn - the operating room, maintenance, the laundry, food services, the laboratory, radiology, even office areas.
- It is important, then, for healthcare employers to develop both an exposure control plan and a hazard communication program, if applicable, as well as to encourage employees to follow safe work practices. Although safe work practices will be facility- and agent-specific, generally employees should:
    - Keep hazardous agents labeled properly;
    - Avoid eating around hazardous agents;
    - Wear proper personal protective equipment, including respirators where necessary;
    - Request non-latex gloves if allergic to latex;
    - Use tools to apply or handle hazardous agents;
    - Avoid recapping needles and use safe and effective alternatives where available;
    - Learn where emergency eyewash stations are located;
    - Dispose of hazardous agents in proper containers;
    - Report leaks and spills;
    - Recognize the signs and symptoms of illness relating to hazardous agents; and
    - Report exposure incidents.

➢ **Ergonomic hazards**

- Ergonomic hazards include lifting, repetitive motion, standing for long periods of time and eye strain due to poor lighting. Overexertion (including lifting) is the number one cause of injury and illness for health services, with almost 74,000 cases (about 45 percent of all health services cases) in the year 2000. That's a much higher incident rate than all of private industry, which had a 27 percent rate. After the motor vehicles/equipment and meat products industries, hospitals, specifically, have the highest number of nonfatal illness cases of disorders associated with repeated trauma.

- While OSHA does not have a specific regulation dedicated to ergonomics, the agency recently began a comprehensive plan to reduce ergonomic-related injuries. In fact, OSHA expects to release guidelines for nursing homes this year. The agency will also use the General Duty Clause of the Occupational Safety and Health Act to crack down on "bad actors."

- In the meantime, healthcare employers may wish to address their own ergonomics hazards by examining possible ergonomic risk factors of healthcare jobs.

In order to control these risks, healthcare employers may want to:

- Provide assist devices for lifting;
- Provide convenient storage of lifting devices;
- Lower items to alleviate reaching;
- Provide handles on carts;
- Encourage team lifts or start a no-lift program;
- Provide redesigned surgical instruments, containers and computer workstations;
- Perform regular maintenance on lifting devices and equipment wheels, cranks and controls; and
- Encourage exercise.

➢ **Physical Hazards**

- Physical hazards include toxic, reactive, corrosive or flammable compressed gases and chemicals; extreme temperatures that may cause burns or heat stress; mechanical hazards that may cause lacerations, punctures or abrasions; electrical hazards; radiation; noise; violence; and slips and falls.
- After overexertion, falls on the same level is the leading cause of injury or illness for health services (15 percent of all cases), followed by contact with objects (11 percent of all cases).

Precautions for this hazard category include:

- Wearing the right shoes;
- Properly cleaning and maintaining floors;

- Reporting leaks and spills;
- Storing cylinders upright;
- Storing flammables in approved, closed containers;
- Wearing proper personal protective equipment, including hearing protection where necessary;
- Maintaining electrical equipment according to manufacturer and company standards;
- Regularly inspecting tools, cords, grounds and accessories;
- Locking and tagging out power sources and switches when servicing or repairing mechanical equipment;
- Learning to recognize and treat the signs of heat stress and drinking plenty of water;
- Not entering restricted radiation areas, unless trained and authorized;
- Treating and interviewing aggressive patients in relatively open areas; and
- Reporting all assaults or threats to a supervisor or manager.

➢ Psychological hazards

Psychological hazards are related to discrimination, technological changes, malfunctioning equipment, tight work schedules, downsizing, overwork, understaffing, paperwork, increased facility size and bureaucracy, violence, dependent and demanding patients, and patient deaths.

All of these factors contribute to stress, fatigue, anger, frustration and the feeling of being isolated and powerless. Failure to recognize and treat the sources of stress results in workers who suffer "burnout" (i.e., those who remain on the job but cease to function effectively). Workers are most likely to encounter severe stress in intensive care units, burn units, emergency rooms and operating rooms.

According to the National Institute for Occupational Safety and Health, some of the methods that have successfully reduced hospital worker stress and dissatisfaction include:

- Regular staff meetings to share feelings and innovative ideas;

- Stress management programs;
- Readily available counseling;
- Alternative job arrangements;
- Adequate staffing;
- Reasonable shift schedules;
- Group therapy for staff dealing with chronically ill or deceased patients;
- Organized and efficient work functions and environment;
- Recognition of and action on legitimate complaints;
- Relaxation exercises;
- Opportunities to improve skills;
- More flexibility and worker participation in scheduling; and
- Scheduled rotation of unit assignments.

Risk of injury from personal violence is an important hazard in Emergency Departments who at times deal with mad, bad or intoxicated patients.

Similarly, Psychiatric Units who have to look after the psychotically disturbed are also at risk.

- ✓ Again, staff education and set policy and procedure needs to be in place for dealing with aggressive patients.
- ✓ Personal security alarms, a system for rapidly mobilizing ancillary staff, and a set approach to safely restraining, immobilizing and sedating violent patients are all important components.

Chemical Hazards

- Toxic chemicals in use in hospitals include:
- Industrial cleaners used by contracted cleaning staff.
- Chemical sterilizers, in particular gluteraldehyde used for the sterilization of endoscopes and other equipment that cannot be steam sterilized.
- Tissue preservatives such as formaldehyde used to store and preserve body tissue prior to histopathology.
- Chemical reagents used in the hospital Pathology Laboratory.
- Cytotoxic drugs requiring preparation prior to parenteral administration to cancer patients.
- Processing chemicals for X-ray film development.
- Anesthetic gases in the Operating Theatre.

The hierarchy of principles for controlling chemical hazards

- **Elimination** (use an alternative process or strategy eg. disposables).
- **Substitution** (use the least toxic chemical that will do the job).
- **Isolation (**keep the relevant chemical in one isolated area if possible).
- **Enclosure** (e.g. gluteraldehyde fume cupboard, preparation enclosure for cytotoxics, closed circuit anesthetic machines with scavenging of exhaust gases).
- **Ventilation** (X-ray processors).
- **Personal protection** (gloves, goggles, plastic gowns etc.)
- **Personal hygiene** (hand washing after use).
- **General cleanliness (**clean up spills, appropriate storage, etc.)

Biological Hazards

There are 3 important modes of disease transmission from patients to staff:

1. **Airborne and droplet aerosol exposure**
   - includes viral upper respiratory tract infections, measles and TB.
   - Preventative measures include
     - keeping distance (>1m) from frontal coughing as much as possible
     - wash hands after every patient contact and especially avoid rubbing eyes before washing
     - high filtration face masks (where applicable - generally not practical in the outpatient setting)
     - isolate inpatients in a negative air pressure room.
2. **Skin contact exposure**
   - Includes *Staphylococcusaureus* and *Varicella*.
   - Prevention requires protective gown and gloves.
3. **Exposure to infectious fluids via broken skin, eyes, mucous membranes, and parenteral exposure**
   - Includes hepatitis **B**, hepatitis **C**, and **HIV** from all body fluids except sweat, as well as gastroenteritis and hepatitis A from fecal fluid.
   - Preventative measures include **universal precautions** (gloves, gown, goggles and mask), and appropriate management of sharps, spills, and contaminated waste.

- If acute exposure to a biological hazard does occur, staff members need to be aware of relevant policies and procedures for appropriate management of the exposure.

  This will include:

  - Appropriate washing for mouth, eyes or skin exposure
  - First aid for penetrating sharps injury
  - Prophylaxis for high risk exposure
  - Testing of the source if possible
  - Testing and follow up of exposed staff
  - Incident reporting.

Psychological Hazards

- **Hospitals are stressful places for sick and injured patients and their families. However, they can also be stressful for staff due to such factors as:**
  - ✓ Shift work, on call duty, fatigue and "burn out".
  - ✓ High workload and demand.
  - ✓ High or unrealistic patient expectations.
  - ✓ Verbal abuse or threats from disgruntled or intoxicated patients.
  - ✓ High or unrealistic expectations from supervisors and management.
  - ✓ Problematic interpersonal work relationships.
  - ✓ Frustrations due to limited resources, especially staffing levels.
  - ✓ Poor organizational climate with low staff morale.

- Hospitals are part of a high demand, high expectation service industry and are heavily reliant on staff for the friendly, safe, effective and efficient delivery of services.
- To optimize productivity and attitude of staff, senior management must be committed to ensuring a conducive organizational climate with high staff morale.
  - Clear priorities and direction,
  - realistic performance goals and workloads,
  - commitment to continuing education and quality assurance,
  - reception to staff feedback, and
  - support with counseling services for stressed staff are all important components.

Vulnerable groups

- Maintenance workers
  - ✓ potentially exposed to solvents, asbestos, electrical hazards

- Housekeepers
  - ✓ exposed to detergents and disinfectants that may cause eye or skin irritations
  - ✓ exposed to blood borne pathogens from hypodermic needles that have been discarded improperly
- Boiler rooms
  - ✓ regularly exposed to high level of noise
- Food service workers
  - ✓ cuts and burns, slippery floors and falls, fatigue and stress from long periods of standing on hard surfaces
- Nurses
  - ✓ exposure to infectious diseases, back injuries, radiation and shift work
- Radiology technicians
  - ✓ potentially exposed to X-rays and radioactive isotopes
- Operating room workers
  - ✓ increased risks of cuts, puncture wounds, infections, radiation and inhalation hazards from waste anesthetic gases

Hierarchy of Control Measures

- ☐ **Eliminate** the hazard is the first choice
- ☐ If the hazard cannot be eliminated completely
  - **Substituting** a less hazardous material, process or equipment
  - **Redesigning** the equipment or work process
  - **Isolating** the hazard through engineering – separating the worker from the hazard.
  - **Administrative controls-Safer working methods or routines**
  - **Personal Protective Equipment (PPE)** is used as a last resort when exposure to risk is not or cannot be minimised by other means.

Responsibilities of the employer

- **For an employer, the main risk assessment duties include:**
  - making a suitable and sufficient assessment of the risks to the health and safety of employees and the risks to others, such as patients, who may be affected
  - identifying the preventative and protective measures needed to improve workplace health and safety
  - introducing the preventative and protective measures needed
  - having arrangements in place for effective planning, organisation and control
  - monitoring and review of the preventative and protective measures
  - providing any health surveillance identified in the risk assessment
  - appointing competent people to assist the employer
  - establishing procedures to be followed in the event of serious and imminent danger
  - providing effective health and safety information, instruction and training for all employees on a regular basis

Being aware

As vital as the healthcare workforce is, they need to be protected from workplace hazards. Breaking healthcare hazards into four categories - hazardous agents, ergonomic hazards, physical hazards and psychological hazards - is one way of approaching healthcare safety. By becoming aware of these hazards and following the precautions presented here, healthcare employers may help to prevent injuries and illnesses in their facilities

Risk at work – Manual handling

Manual handling causes over a third of all workplace injuries. These include work-related musculoskeletal disorders (MSDs) such as pain and injuries to arms, legs and joints, and repetitive strain injuries of various sorts.

Why is dealing with manual handling important?

Manual handling injuries can have serious implications for the employer and the person who has been injured. They can occur almost anywhere in the workplace and heavy manual labour, awkward postures, repetitive movements of arms, legs and back or previous/existing injury can increase the risk

What we have to do?

To help prevent manual handling injuries in the workplace, you should avoid such tasks as far as possible. However, where it is not possible to avoid handling a load, employers must look at the risks of that task and put sensible health and safety measures in place to prevent and avoid injury.

For any lifting activity

Always take into account**:**

- individual capability
- the nature of the load
- environmental conditions
- training
- work organisation

If you need to lift something manually

- Reduce the amount of twisting, stooping and reaching
- Avoid lifting from floor level or above shoulder height, especially heavy loads
- Adjust storage areas to minimize the need to carry out such movements
- Consider how you can minimize carrying distances
- Assess the weight to be carried and whether the worker can move the load safely or needs any help – maybe the load can be broken down to smaller, lighter components

If you need to use lifting equipment

- Consider whether you can use a lifting aid, such as a forklift truck, electric or hand-powered hoist, or a conveyor

- Think about storage as part of the delivery process – maybe heavy items could be delivered directly, or closer, to the storage area
- Reduce carrying distances where possible

Good handling technique for lifting

There are some simple things to do before and during the lift/carry:

- Remove obstructions from the route.
- For a long lift, plan to rest the load midway on a table or bench to change grip.
- Keep the load close to the waist. The load should be kept close to the body for as long as possible while lifting.
- Keep the heaviest side of the load next to the body.
- Adopt a stable position and make sure your feet are apart, with one leg slightly forward to maintain balance
-

Think before lifting/handling. Plan the lift. Can handling aids be used? Where is the load going to be placed? Will help be needed with the load? Remove obstructions such as discarded wrapping materials. For a long lift, consider resting the load midway on a table or bench to change grip.

Adopt a stable position. The feet should be apart with one leg slightly forward to maintain balance (alongside the load, if it is on the ground). Be prepared to move your feet during the lift to maintain your stability. Avoid tight clothing or unsuitable footwear, which may make this difficult.
Get a good hold. Where possible, the load should be hugged as close as possible to the body. This may be better than gripping it tightly with hands only.

Start in a good posture. At the start of the lift, slight bending of the back, hips and knees is preferable to fully flexing the back (stooping) or fully flexing the hips and knees (squatting).
Don't flex the back any further while lifting. This can happen if the legs begin to straighten before starting to raise the load.

Keep the load close to the waist. Keep the load close to the body for as long as possible while lifting. Keep the heaviest side of the load next to the body. If a close approach to the load is not possible, try to slide it towards the body before attempting to lift it.

Avoid twisting the back or leaning sideways, especially while the back is bent. Shoulders should be kept level and facing in the same direction as the hips. Turning by moving the feet is better than twisting and lifting at the same time.
Keep the head up when handling. Look ahead, not down at the load, once it has been held securely.
Move smoothly. The load should not be jerked or snatched as this can make it harder to keep control and can increase the risk of injury.

Don't lift or handle more than can be easily managed. There is a difference between what people can lift and what they can safely lift. If in doubt, seek advice or get help.

Put down, then adjust. If precise positioning of the load is necessary, put it down first, then slide it into the desired position.

General Safety Rules

1) **All** accidents, injuries or near misses, regardless of their nature, shall be promptly reported to the safety officer.
2) Clothing shall be appropriate to the duties being performed. Long pants, a clean neat shirt and steel toed shoes are the minimum requirements.
3) Hard hats and safety vests are provided for all warehouse staff and **must** be worn at all times in the warehouse, loading or unloading of vehicles in the yard.
4) Running is **not** permitted except in extreme emergencies.
5) Smoking is not permitted in any part of the warehouse or office. You may only smoke in designated areas.
6) Visitors and customers are to be escorted by staff while on company property.
7) Hand tools are to be used for their intended purpose only.
8) Only licensed personnel may operate forklifts or other warehouse equipment and must wear a seatbelt while doing so.
9) Riding on equipment is prohibited except where designated for operator.
10) Horseplay, fighting or tomfoolery is strictly prohibited on Your Company Name premises
11) All spacers are to be of equal proportion and undamaged. Damaged spacers are dangerous.
12) Open lifts are to be stored on the floor or in assigned bunks. Do not stack an open lift; this act willresult in disciplinary action up to and including dismissal. All lumber lifts must be banded.
13) Only solid spacers are to be used on lumber products, no particle board spacers.
14) All bunked products will be placed securely in the bunks.
15) All spills will be immediately cleaned up and reported.
16) Drawers and filing cabinets will be kept closed when not in use.
17) Filing cabinet drawers are to be filled from the bottom up or the cabinet is to be securely fastened /anchored.
18) Lifts and clutter will be cleaned up before the end of your workday.
19) Aisles are to be kept clear at **ALL** times.
20) Do not unload a truck alone under any circumstances, if someone can not help you then wait or call someone else for help. (Applies on and off Your Company Name property)

Safety Tips

1) If you are not sure…..ask.
2) Follow instructions and don't take chances.
3) Wear your personal safety equipment.
4) Never operate equipment you have not been trained for.

5) Keep your work area clean.
6) Stay clear of forklifts while they are being operated.
7) Avoid injury by lifting correctly. If it's heavy ask for help. Max weight tobe lifted is 75lbs.
8) Make sure the job can be done safely.
9) **DO NOT** unload a truck alone.

Self-check 1	**Written Test**

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. List out four categories of occupational health hazards (4 points)
2. What is Ergonomic hazards (3 points)
3. What are the hierarchy of principles for controlling chemical hazards (9 points)
4. List out the six safety tips to prevent OHS Hazards (6 points)

Note: Satisfactory rating - 20 points Unsatisfactory - below 20 points

You can ask you trainer for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

1. _____
_____
_____
_____

2. _____

_____
_____

3. _____

_____
_____
_____
_____
_____
_____
_____
_____

4. _____

_____
_____
_____
_____
_____

Transporting and Assisting Patient by Safe Handling Version: 1 Revision : 0	Author: Ferhan Abubaker(BSC,MPH) & Eskender Birhanu(BSC) : Harar Health Science College , Harar Ethiopia	Date : September 2019

Operation Sheet 1	

Workplace Design and Task analysis

Definition - What does Workplace Design mean?

Workplace design refers to the process of designing and organizing a workplace to optimize worker performance and safety.

It is an important health and safety issue for workers in both high-risk environments (such as construction sites and Health sector) and low-risk workplaces (such as offices).

Safeopedia explains Workplace Design

The relationship between workplace design and wellness has become increasingly emphasized by employers as an important factor of worker wellness.

In industrial settings, workplaces must be designed to ensure workers can safely perform routine functions and efficiently conduct emergency safety procedures.

In an office workplace, employers increasingly focus on designing environments that optimize employee wellness by maximizing conditions such as air quality, lighting, and ergonomics.

Workplace design principles involve efforts to optimize the safety and health conditions of regular work activities through measures such as ergonomic seating and temperature control, as well as efforts to protect workers in high-risk industries through measures like designing safe navigation routes through construction sites. Some workplaces use detailed aesthetic designs to reduce worker stress. These might involve the use of plants to improve mood, the use of specific types of lighting, and the use of alterations to make a space “feel” less crowded.

For higher-risk industries, workplace design can involve the implementation of engineering and administrative controls designed to make work processes safer. Industrial design principles can involve a variety of different safety-focused practices, such as designing a work floor so that workers have enough space to move around dangerous equipment or by ensuring that safety equipment is easily accessible.

According to the National Institute for Occupational Safety and Health (NIOSH), the use of design-driven concepts has been documented as the most effective and reliable method of

preventing occupational harm or illness. NIOSH promotes occupational health and safety through a workplace design framework called “Prevention through Design” (PtD). The PtD program focuses on preventing workplace safety incidents through the design and redesign of the tools, equipment, structures, and processes that are used in the workplace.

Is there a difference between workplace design and job design?

Job design and workplace design are often used interchangeably because both contribute to keep the physical requirements of a job reasonable.

Job design refers to administrative changes that can help improve working conditions.

In comparison, workplace design concentrates on dealing with the workstation, the tools, and the body position that all influence the way a person does his or her work. Good workplace design reduces static positions, repetitive motions and awkward body positions.

"**Job design**" refers to the way that a set of tasks, or an entire job, is organized. Job design helps to determine:

- What tasks are done
- How the tasks are done.
- How many tasks are done
- In what order the tasks are done.

It takes into account all factors which affect the work, and organizes the content and tasks so that the whole job is less likely to be a risk to the employee. Job design involves administrative areas such as:

- Job rotation
- Job enlargement
- Task/machine pacing
- Work breaks
- Working hours

A well designed job will encourage a variety of 'good' body positions, have reasonable strength requirements, require a reasonable amount of mental activity, and help foster feelings of achievement and self-esteem.

How can job design help with the organization of work?

Job design principles can address problems such as:

- Work overload
- Work under load

- Repetitiveness
- Limited control over work
- Isolation
- Shift work
- Delays in filling vacant positions
- Excessive working hours
- Limited understanding of the whole job process

Job design can be used to accommodate the abilities and diversity of individuals, including those returning to work following injury or illness. For example, job design is sometimes considered as a way to help deal with stress in the workplace.

Features of good workplace design

Good job design accommodates employees' mental and physical characteristics by paying attention to:

- Muscular energy such as work/rest schedules or pace of work.
- Mental energy such as boring or extremely difficult tasks.

Good workplace design:

- Allows for employee input. Employees should have the option to vary activities according to personal needs, work habits, and the circumstances in the workplace.
- Gives employees a sense of contribution and accomplishment.
- Includes training so employees know what tasks to do and how to do them properly.
- Provides good work/rest schedules.
- Allows for an adjustment period for physically demanding jobs.
- Provides feedback to the employees about their performance.
- Minimizes energy expenditure and force requirements.
- Balances static and dynamic work.

Job design is an ongoing process. The goal is to make adjustments as conditions or tasks change within the workplace.

Commonapproaches to job design

Achieving good job design involves administrative practices that determine what the employee does, for how long, where, and when as well as giving the employees choice where ever possible. In job design, you may choose to examine the various tasks of an individual job or the design of a group of jobs.

Approaches to job design include:

Job Enlargement: Job enlargement changes the jobs to include more and/or different tasks. Job enlargement should add interest to the work but may or may not give employees more responsibility.

Job Rotation: Job rotation moves employees from one task to another. It distributes the group tasks among a number of employees.

Job Enrichment: Job enrichment allows employees to assume more responsibility, accountability, and independence when learning new tasks or to allow for greater participation and new opportunities.

Work Design (Job Engineering): Work design allows employees to see how the work methods, layout and handling procedures link together as well as the interaction between people and machines.

The overall goals of job design

Goals can be in many difference areas and include:

Task Variety

To alleviate boredom, avoid both excessive static body positions and repetitive movements. Design jobs to have a variety of tasks that require changes in body position, muscles used, and mental activities.

Two methods are job enlargement and job rotation. For example, if an employee normally assembles parts, the job may be enlarged to include new tasks such as work planning, inspection / quality control, or maintenance. Alternatively, the tasks may include working in the same department, but changing tasks every hour. For example, in a laundry facility employees can rotate between various stations (sorting, washer, dryer, iron, etc) as long as it provides for a change in physical or mental expenditure.

Skill Variety

Through job enlargement and job enrichment, often new skills are required. Learning skills is often linked to job satisfaction, good mental health, and well-being.

Work Breaks / Rest Breaks

Rest breaks help alleviate the problems of unavoidable repetitive movements or static body positions. More frequent but shorter breaks (sometimes called "micro breaks") are sometimes preferable to fewer long breaks.

During rest breaks, encourage employees to change body position and to exercise. It is important that employees stretch and use different muscle groups. If the employee has been very active, a rest break should include a stationary activity or stretching.

Allowance for an Adjustment Period

When work demands physical effort, have an adjustment period for new employees and for all employees after holidays, layoffs, or illnesses. Allow time to become accustomed to the physical demands of work by gradually "getting in shape." Employees who work in extreme hot or cold conditions also need time to acclimatize.

Provide Training

Training in correct work procedures and equipment operation is needed so that employees understand what is expected of them and how to work safely. Training should be organized, consistent and ongoing. It may occur in a classroom or on the job.

Vary Mental Activities

Tasks should be coordinated so that they are balanced during the day for the individual employee as well as balanced among a group of employees. You may want to allow the employee some degree of choice as to what types of mental tasks they want to do and when. This choice will allow the employee to do tasks when best suited to their 'alertness' patterns during the day. Some people may prefer routine tasks in the morning (such as checklists or filling in forms) and save tasks such as problem solving until the afternoon, or vice versa.

Steps take when carrying out a job design project

Although there are many ways to carry out job design, the following stages are essential:

Do an assessment of current work practices.

Is job design needed or feasible? Discuss the process with the employees and supervisors involved & be clear about the process, or any changes or training that will be involved.

Do a task analysis.

Examine the job and determine exactly what the tasks are. Consider what equipment and workstation features are important for completing the tasks. Identify problem areas.

Design the job.

Identify the methods for doing the work, work/rest schedules, training requirements, equipment needed and workplace changes. Coordinate the different tasks so each one varies mental activities and body position. Be careful not to under or overload the job.

Implement the new job design gradually.

You may want to start on a small scale or with a pilot project. Train employees in the new procedures and use of equipment. Allow for an adjustment period and time to gain experience with the new job design.

The University of Cambridge Human Resources area suggests the following key factors need to be taken into consideration when designing roles:

- **Variety**—Greater variety in a job can improve the interest, challenge and commitment of the role holder to the task. Doing the same repetitive tasks may offer little challenge and can lead to role holders losing interest or becoming and dissatisfied.
- **Responsibility**—Individuals need to feel responsible for the work they are doing, either individually or as part of a team. Their work should be clearly identified so they can see that they are personally responsible for the outcomes (successes and failures) that occur as a result of their own actions. If the responsibilities are clear, then the role holder and their supervisor will be better able to know if the accountabilities of the position are being delivered. The employee should be able to understand the significance of the work they undertake and where it fits into the purpose of the organisation.
- **Autonomy**—This goes hand in hand with responsibility. Autonomy means giving more scope to individuals to regulate and control their own work within the parameters set for the job. The role holder will need to have some areas of decision-making that they can call their own, within the overall framework of their job. For example, this might include scope for exercising some discretion over their method of working in order to deliver.
- **Task identity**—Individuals often receive more satisfaction from doing a 'whole' piece of work. This is more likely to occur when a task or job has a distinct beginning and end which is clearly apparent to the role-holder and others who work around them. It is highly desirable that people see the end results of the work they have produced, either on their own or as a part of a team.
- **Feedback**—Everyone benefits from information on how they are doing and this helps role-holders feel motivated and contributes to their development in the role.
- Providing genuine feedback is primarily the responsibility of the line manager, and can be built in to the formal working relationship through e.g. regular one-to-one meetings to discuss work objectives.
- **Participation in decision making**—Most people want to take part in decision making about matters that directly affect their work. As a result of experience they also have considerable potential to contribute. People are, generally, far more likely to act upon and own decisions that they have had a part in making.

- **Recognition and support**—People usually aspire to have jobs that contribute to self-respect, particularly through acceptance and recognition by fellow workers and their supervisors.
- **Working environment**—A job must be designed to support a safe and healthy working environment that is inclusive, non-discriminatory, free from harassment, occupational health and safety hazards.

Get Feedback and Re-evaluate job design on a continual basis.

Make any necessary adjustments. Be sure to get feedback from all those involved.

You may also want to establish a committee to represent the various groups involved. Job design should involve employees, unions, the health and safety committee and managers during the entire process. Participation of all parties increases communication and understanding.

Be clear that purpose of the job design is to strengthen the operations and its workforce, not to eliminate jobs or sets of skills.

Example of a job design checklist

Job Design		Yes	No
Task and Skill variety	Repetitive tasks – Are the same muscle groups or mental tasks done over and over?		
	Static positions – Are there few or no opportunities to change position?		
	Fast work pace – Is there muscle tension and stress?		
Work/Rest Schedules	Long work period(s) – Is there potential for fatigue?		
Adjustment Period	Are there allowances for adjustment periods or varying pace of work for new/returning employees?		
Training	Have employees had adequate training?		
Mental variety	Is there some variety or ability to choose what to do next?		

Task (job) analysis is the foundation for all assessment and selection decisions. To identify the best person for the job, it is crucial to fully understand the nature of that job. Job analysis provides a way to develop this understanding by examining the tasks performed in a job, the competencies required to perform those tasks, and the connection between the tasks and competencies.

Task Job analysis data is used to:

- establish and document competencies required for a job
- identify the job-relatedness of the tasks and competencies needed to successfully perform the job
- provide a source of legal defensibility of assessment and selection procedures.

Information from a job analysis can also be used to determine job requirements, training needs, position classification and grade levels, and inform other personnel actions, such as promotions and performance appraisals

Self-Check 2	**Written Test**

Instructions: Answer all the questions listed below. Write your answers in the sheet provided in the next page.

1. Explain the difference between workplace design and job design? (7 points)
2. List out the two Features of good workplace design (4 points)
3. Describe the key factors need to be taken into consideration when designing roles?(6 points)
4. List out the Common approaches to job design (7 points)

Note: Satisfactory rating - 20 points Unsatisfactory - below 20 points

You can ask you trainer for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

1. _____
   _____
   _____

2. _____

   _____

3. _____

   _____
   _____
_____
_____

4. _____

   _____
   _____
   _____

Workplace policies and procedures

The purpose of the Health and Safety policies and procedures is to guide and direct all employees to work safely and prevent injury, to themselves and others.

All employees are encouraged to participate in developing, implementing, and enforcing Health and Safety policies and procedures. All employees must take all reasonable steps to prevent accidents and never sacrifice safety for expedience

Our goal is to eliminate or minimize hazards that can cause accidents. It is company policy that all employees be given a copy of the policies manual and be familiar with its contents

Health and Safety Policy

The health organisation is committed to the goal of providing and maintaining a healthy and safe working environment, with a view to continuous improvement. This goal is only achievable by adherence to established objectives striving to exceed all obligations under applicable legislation, and by fostering an enthusiastic commitment to health, safety and the environment within the health organisation personnel, contractors and visitors.

In particular:

- Management, working in cooperation with the Joint Health and Safety Committee, will strive to take all reasonable steps to reduce workplace hazards to as low as reasonably achievable.
- Supervisors and managers are held accountable for the health and safety of all employees under their supervision. This includes responsibility for applicable training and instruction, appropriate follow-up on reported health and safety concerns, and implementation of recommended corrective action. This accountability is integrated into the performance appraisal system.
- Supervisors, workers and visitors are expected to perform their duties and responsibilities in a safe and healthful manner, and are accountable for the Health and Safety of themselves and others.

 the health organisation is committed to providing all necessary training and instruction to ensure that appropriate work practices are followed on the job, and to promote their use off the job.

If necessary, The health organisation will take disciplinary action where individuals fail to work in a healthy and safe manner, or do not comply with applicable legislation or corporate policies and procedures. Health, safety, the environment and loss control in the workplace are everyone's responsibility. The health organisation expects that everyone will join in our efforts to provide a healthy and safe working environment on a continuous day to day basis. Only through the dedication and efforts of all individuals can the health organisation succeed in providing a healthy safe working environment.

Occupational Health and Safety in Workplaces

Duties of Workers

Occupational Health and Safety and You

One of your most important responsibilities is to protect your Health and Safety as well as that of your co-workers. This booklet will discuss some of your duties under the occupational Health and Safety legislation and help you to make your workplace safer and healthier.

What the law requires

Workplaces under the jurisdiction are governed by your provincial legislation.

The legislation places duties on owners, employers, workers, suppliers, the self employed and contractors, to establish and maintain safe and healthy working conditions. The legislation is administered by your provincial legislation. Your officials are responsible for monitoring compliance.

Duties Of Your Employer

Your employer is responsible for providing you with safe and healthy working conditions. This includes a duty to protect you from violence, discrimination and harassment. You must cooperate with your employer in making your workplace safe and healthy.

Your Responsibilities

You must also comply with the legislation. You have responsibilities to:

 protect your own Health and Safety and that of your co-workers;

 not initiate or participate in the harassment of another worker; and

 co-operate with your supervisor and anyone else with duties under the legislation.

Your Rights

The legislation gives your three rights:

the right to know the hazards at work and how to control them;

the right to participate in Occupational Health and Safety; and

the right to refuse work which you **believe** to be unusually dangerous. You may not be punished for using these rights. An employer can be required to legally justify any action taken against a worker who is active in Health and Safety.

Your Right To Know

The Act requires your employer to provide you with all the information you need to control the hazards you face at work. For example, chemicals at the workplace must be listed. You are entitled to review this list. Your employer must train you to safely handle the chemicals you will work with. If you are inexperienced, you must receive an orientation which includes;

What to do in a fire or other emergency;

 First aid facilities;

 Prohibited or restricted areas;

 Workplace hazards; and

Any other information you should know.

You must also be supervised closely by a competent supervisor.

Your Right To Participate

You have the right to become involved in occupational Health and Safety.

The legislation encourages employers and workers to work together to maintain a healthy and safe workplace. Employers at workplaces with (ten or more – consult your provincial act) workers must set up an occupational health committee of employer and worker representatives.

Committees Have Duties To:

- Regularly inspect the workplace;
- Conduct accident investigations;
- Deal with the Health and Safety concerns of employees;
- Investigate refusals to work;
- Meet at least (four times a year – consult your provincial act); and return minutes of each meeting to the Division.

Committee members are entitled to five days (consult your provincial legislation) of unpaid educational leave each year to take occupational Health and Safety courses. They may attend courses provided by the Division without loss of pay or benefits.

Certain types of workplaces with less than (ten – consult your provincial act) employees must have a worker Health and Safety representative. The representative must be selected by the workers at the workplace. He or she has many of the responsibilities of an occupational health committee.

Your Right To Refuse

You have the right to refuse to do work which you believe is unusually dangerous.

The unusual danger may be to you or to anyone else. An unusual danger couldinclude such things as:

- a danger which is not normal for your occupation or the job;
- a danger under which you would not normally carry out your job; and/or
- a situation for which you are not properly trained, equipped or experienced.

To exercise this right, use the following guidelines.

Once you believe that the work you have been asked to do is unusually dangerous, you should inform your supervisor. Make sure that the supervisor understands that you are refusing to do the disputed job for health and safety reasons. Work with the supervisor to attempt to resolve the problem. If the problem cannot be resolved by the supervisor to your satisfaction, and no worker health and safety representative or occupational health committee

exists at the workplace, your supervisor should phone the Division and ask for advice. You also have the right to contact the Division at any time.

The supervisor has the right to assign you to other work (at no loss in pay orbenefits) until the matter is resolved.

Do not leave the site without the permission of your employer.

If a committee exists at the workplace, contact your local representative andask for help. Your supervisor should contact the co-chairpersons and askthem to investigate. They will try to resolve the matter.

If they cannotresolve the matter to your satisfaction, they will convene for an emergency committee meeting. The committee will investigate and prepare a report onthe refusal.

You have the right to continue to refuse until:

- measures have been taken to satisfy you that the job is now safe toperform; or
- Your occupational health committee has investigated and ruledagainst your refusal.If the committee rules against your refusal, you have the right to appeal the ruling to an occupational health officer. The officer will investigate andprepare a report on the disputed work. If you disagree with the decision ofthe officer, you may appeal to the director of the Division.An employer cannot assign another worker to do the disputed job unless thereplacement worker is advised in writing:
- of the refusal and the reasons for it;
- of the reasons why the employer believes that there placementworker can do the disputed job safely;
- that the replacement worker also has the right to refuse; and
- of the steps to follow when exercising this right.

Branch Manager

The branch manager is responsible for the health and safety of all employeeswithin their branch. The branch manager must ensure all policies andprocedures are followed according to Occupational Health & Safety.

Duties

Branch Manager

1) Ensure that all reasonable steps are taken to prevent accidents.

2) Ensure that standards and procedures are developed and maintained.

3) Be familiar with the Occupational Health & Safety act and any revisedregulations and ensure they are followed.

4) Ensure that all employees are instructed in the procedures andrequirements of Occupational Health & Safety.

5) Review accident reports, safety audits and other related material relativeto health or safety.

Safety Officer

1. Ensure that all reasonable steps are taken to prevent accidents.

2. Be familiar with Occupational Health & Safety act, the company policy andany other legislation pertaining to health or safety.

3. Ensure all policies and legislation is followed by all levels of employees.

4. Ensure safety meetings are held and minutes are recorded, posted andfiled accordingly to Occupational Health & Safety regulations.

4. Ensure all accidents are reported and investigated.

5. Ensure MSDS sheets are provided for all hazardous materials delivered tothe workplace and are readily available for employees to review.

6) Review all MSDS and advise/train employees in the safe use, storage andtransportation of controlled or dangerous products including what to do incase of an accidental spill or emergency.

7. Ensure employees are instructed in the procedures and requirements ofOccupational Health & Safety.

8. Review all accidents and near misses to determine root and basic causes,with suggestion/implementation of changes to prevent re-occurrence.

9. Ensure all employees are trained in WHMIS (Workplace HazardousMaterial Information System)

All Other Staff

1) Comply with all Company Procedures, Safety Policy and requirements ofOccupational Health & Safety.

2) Be responsible for working safely and carrying out their duties with skilland care as to not cause accidental injury to themselves, fellowemployees or the general public.

3) Immediately report all injuries, near misses or potential hazards to theirsupervisor.

4) Know the location of all fire extinguishers, fire alarms or other warningdevices.

5) Ensure all personal safety equipment is being used properly.

6) Never engage in horse play or tomfoolery.

7) Maintain clean and orderly work area.

8) When in doubt…. ASK

Accident and Near Miss Reporting

The following protocol must be followed.

1) All employees must immediately report any occupational injury, accidentor near miss to the safety officer or their supervisor.

2) Supervisors must immediately tend to injuries and then report them tothe safety officer.

3) Branch managers must immediately discuss the incident with the safetyofficer and injured persons.

The purpose of this procedure is to comply with Occupational Health & Safetyact, workers compensation board and to determine the cause of the accident andmake recommendations to prevent further re-occurrence. All reports of injurymust be filed.

If an injury occurs a record must be kept and include the following:

a) name of worker

b) name and qualifications of person giving first aid

c) a description of illness or injury

d) the first aid given to the worker

e) the date and time the illness or injury

f) the date and time the illness or injury was reported

g) where at the work side the incident occurred

h) the work-related cause of the incident, if anyThe employer must retain the records kept for 3 years from the date the incidentis recorded. A person who has custody of records must ensure that no personother than the worker has access to a workers records unless:

a) the record is in a form that does not identify worker

b) the worker has given written permission to the person

c) the Director of Medical Services or a person authorized by the directorrequires to be produced under the act.

An employer must give a worker a copy of the records pertaining to the worker ifthe worker asks for a copy.

Critical Injury Protocol

First and foremost, always take whatever measures are required to provideproper care of an injured worker.

If a critical injury has occurred and the worker has been cared for, the branchmanager, safety officer and W.C.B must be notified. The appropriate reportmust be completed as soon as possible; this is to ensure that important detailsare not forgotten.

A critical injury is an injury that….

1) Places life in jeopardy
2) Produces unconsciousness
3) Results in substantial loss of blood
4) Involves the fracture of a leg or arm, but not a finger or toe
5) Involves the amputation of a leg, arm, hand or foot, but not a finger ortoe.
6) Consists of burns to major portion of the body.
7) Causes loss of sight in an eye.

Accident Investigation Policy

All accidents that result in injury or property damage or that could have resultedin serious injury or property damage (near miss) must be thoroughlyinvestigated.

The investigation must determine the cause of the incident so that appropriateaction can be taken to prevent recurrence.

The safety officer shall be responsible for conducting the investigation. Theinvestigation report shall be completed as soon as possible after the incident andreported to the branch manager. The safety officer and appropriate supervisorshall determine what steps are to be taken to prevent recurrence.Any disputes arising from the investigation will be investigated and arbitrated bythe branch manager.

Alcohol and Drug Policy

It is the responsibility of all employees to ensure an alcohol and drug freeenvironment. If there is any awareness or suspicion that any employee, supplieror visitor is under the influence of illegal narcotics or alcohol, will be removedfrom the premises immediately.

Should an employee report to work while under the influence of suchsubstances, the employee will be taken home either in a cab or by the BranchManager.

This is a zero tolerance policy

Disciplinary Action

Careless work and irresponsible behaviour directly affect the quality of healthand safety in the workplace. Even absenteeism influences safety by placing moreduties on fellow employees.

The following instances shall be cause for verbal or written warning and possibledismissal.

1) Absenteeism without cause
2) Health and safety violations
3) Poor conduct or misconduct
4) Theft
5) Sexual harassment
6) Racial discrimination
7) Carelessness
8) Willful damage to company property
9) Drug or alcohol use

Compliance with company and legislative safety standards is necessary tomaintain a safe and healthy work environment. As with any program noncompliance issues must be dealt with.

The following is a guideline for disciplinary actions for safety infractions based onseriousness of the offence.

*First offence, employee will be given a documented verbal warning

*Second offence, employee will be given a written warning and a one daysuspension.

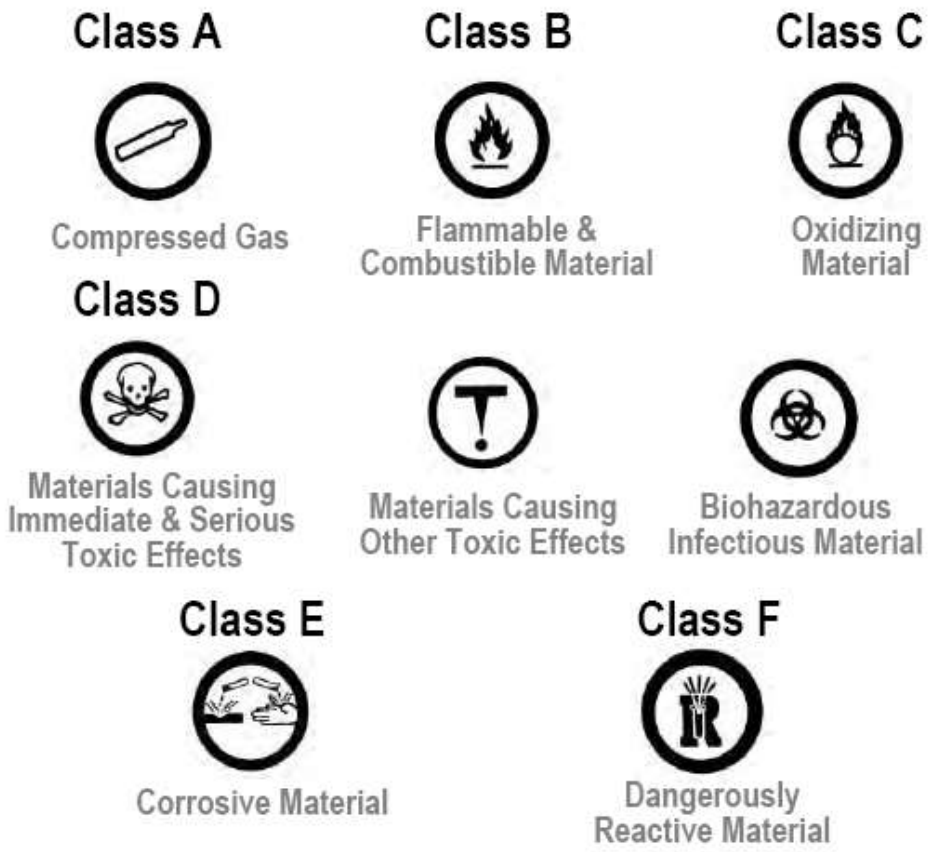
*Third offence, employee may be suspended or terminated (suspension ortermination to fit seriousness of the offence).

Hazard Warning Signs

Whenever possible, warning signs will be displayed where a potential hazardmay cause injury. Warning signs must be strictly adhered to.

Warning signs must be posted where hazards exist and must not be removedunless hazard has been controlled.

SYMBOLS



Environmental Policy

The health organizationis committed to the Protection of the Environment forPresent and Future Generations. All Employees Are Responsible forincorporating into Their Planning and Work the Actions Necessary to fulfill thisCommitment.

The health organization will meet These Responsibilities by Endeavoring toProvide the Resources for Continuing To:

- Design and manage our operations to meet or surpass applicableenvironmental laws.

 Work in partnership with customers, suppliers, trade associations andgovernment agencies to promote the environmentally safe handling anddisposition of materials and products.

 Acquire knowledge and technologies to improve the environmentallysave efficient use of our processes and products.

 Formulate and implement effective environmental emergency responsesystems.

Involve our employees in our environmental programs and keep theminformed of our performance.

Equipment and environmental maintenance

Medical devices are assets that directly affect human lives. They are considerableinvestments and in many cases have high maintenance costs.

It is important, therefore,to have a well planned and managed maintenance programme that is able to keep themedical equipment in a health-care institution reliable, safe and available for use whenit is needed for diagnostic procedures, therapy, treatments and monitoring of patients.In addition, such a programme prolongs the useful life of the equipment and minimizesthe cost of equipment ownership.

Medical equipment maintenance canbe divided into two major categories:

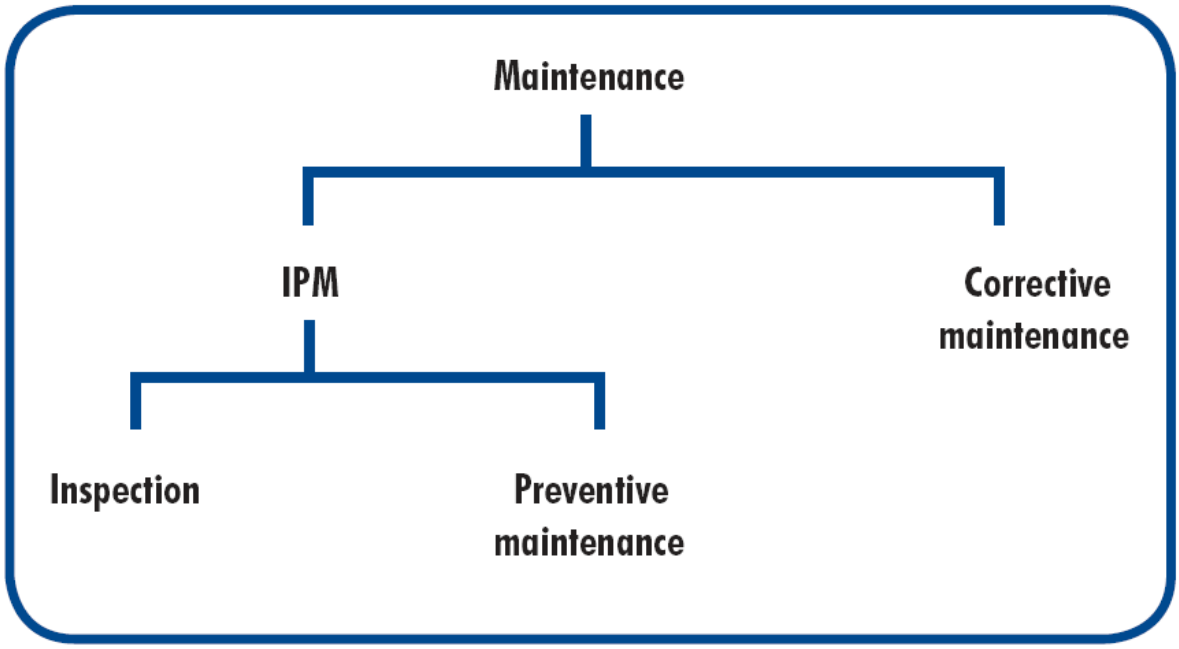
Inspection and preventive maintenance(IPM), and **corrective maintenance**(CM) (see Figure 1). IPM includes allscheduled activities that ensure equipmentfunctionality and prevent breakdownsor failures.

Performance and safetyinspections are straightforward proceduresthat verify proper functionality and safeuse of a device.

Preventive maintenance(PM) refers to scheduled activitiesperformed to extend the life of a deviceand prevent failure (i.e. by calibration,part replacement, lubrication, cleaning,etc)

 Promote employee awareness of this policy and enhance their capabilities to implement this policy.

Figure 1. Components of a maintenance programme



Inspection can be conducted as a stand-alone activity and in conjunction with PM to ensure functionality; this isimportant as PM can be fairly invasive inthat components are removed, cleanedor replaced.

It is essential for any health-care facility,regardless of its size, to implement amaintenance programme for medicalequipment. The complexity of theprogramme depends on the size and typeof facility, its location, and the resourcesrequired. However, the principles of agood maintenance programme will bethe same if it is in an urban area in ahigh-income country or a rural setting ina low- to middle-income country.

Benefits of Proper Equipment Maintenance

Investing in the maintenance of your environmental equipment is one of the most important moves you can make. Not only can improperly functioning instruments provide unreliable data, they can also harm your employees. Some of the benefits of taking good care of your equipment include:

- Reducing waste to run your business more efficiently

- Avoiding major issues that can significantly impact project deadlines
- Ensuring high quality results
- Maintaining a safe and healthy work environment for all employees
- Extending the useful life of equipment, allowing you to get the most from it

It’s important to ensure all employees understand the importance of properly maintaining equipment. When everyone works together to keep instruments in good working condition, it’s much easier to achieve this initiative.

3 Maintenance related definitions

Key terms used in the discussion of medical equipment maintenance are defined below.

Term	Definition
Acceptance testing	The initial inspection performed on a piece of medical equipment prior to it being put into service. When the device first arrives in the health-care facility, it is checked to ensure it matches the purchase order, it is functioning as specified, the training for users has been arranged and it is installed correctly. If a computerized maintenance management system (CMMS) is available, it is registered into the CMMS.
Calibration	Some medical equipment, particularly those with therapeutic energy output (e.g. defibrillators, electrosurgical units, physical therapy stimulators, etc.), needs to be calibrated periodically. This means that energy levels are to be measured and if there is a discrepancy from the indicated levels, adjustments must be made until the device functions within specifications. Devices that take measurements (e.g. electrocardiographs, laboratory equipment, patient scales, pulmonary function analysers, etc.) also require periodic *calibration* to ensure accuracy compared to known standards.
Clinical engineer	A professional who supports and advances patient care by applying engineering and managerial skills to health-care technology (American College of Clinical Engineering). While a *clinical engineer* is a specialized biomedical engineer, the terms are often used interchangeably.
Clinical engineering department/group	Engineer/technician or team of engineers/technicians responsible for the management and maintenance of medical equipment. Depending on the context and country, this department or team may be referred to by a wide variety of names. Some alternative names include: 'biomedical engineering department', 'medical equipment maintenance department', 'medical equipment management unit', etc. In this document, we refer most often to *clinical engineering department.*
Common descriptive nomenclature	The terminology used to describe a device. Using common universal descriptive names from a single internationally accepted source[1] is key to comparing inspection procedures, inspection times, failure rates, service costs and other important maintenance management information from facility to facility. Although manufacturers have specific names for devices, it is important to store the common name of the device as listed in the nomenclature system (e.g. nomenclature name: electrosurgical system, monopolar/bipolar; vendor name for the device: electrosurgical generator; vendor model name: Radiolase).
Corrective maintenance (CM)	A process used to restore the physical integrity, safety and/or performance of a device after a *failure. Corrective maintenance* and *unscheduled maintenance* are regarded as equivalent to the term *repair.* This document uses these terms interchangeably.
Failure	The condition of not meeting intended performance or safety requirements, and/or a breach of physical integrity. A *failure* is corrected by *repair* and/or *calibration.*
Inspection	*Inspection* refers to scheduled activities necessary to ensure a piece of medical equipment is functioning correctly. It includes both *performance inspections* and *safety inspections.* These occur in conjunction with *preventive maintenance, corrective maintenance,* or *calibration* but can also be completed as a stand-alone activity scheduled at specific intervals.
Inspection and preventive maintenance (IPM)	IPM refers to all the scheduled activity necessary to ensure a piece of medical equipment is functioning correctly and is well maintained. IPM therefore includes *inspection* and *preventive maintenance* (PM).

Performance inspections	These activities are designed to test the operating status of a medical device. Tests compare the performance of the device to technical specifications established by the manufacturer in their maintenance or service manual. These inspections are not meant to extend the life of equipment, but merely to assess its current condition. *Performance inspections* are sometimes referred to as 'performance assurance inspections'.
Predictive maintenance	This activity involves a forecasting technique to determine the rate of failure of certain types of replaceable components (e.g. batteries, valves, pumps, seals). The maintenance interval is then set so components are replaced before they fail, ensuring the equipment continues to operate reliably. In health care this is primarily done in a facility that has a large number of medical devices from a single manufacturer or model.
Preventive maintenance (PM)	PM involves maintenance performed to extend the life of the device and prevent *failure*. PM is usually scheduled at specific intervals and includes specific maintenance activities such as lubrication, cleaning (e.g. filters) or replacing parts that are expected to wear (e.g. bearings) or which have a finite life (e.g. tubing). The procedures and intervals are usually established by the manufacturer. In special cases the user may change the frequency to accommodate local environmental conditions. *Preventive maintenance* is sometimes referred to as 'planned maintenance' or 'scheduled maintenance'. This document uses these terms interchangeably.
Repair	A process used to restore the physical integrity, safety, and/or performance of a device after a *failure*. Used interchangeably with *corrective maintenance*.
Safety inspections	These are performed to ensure the device is electrically and mechanically safe. These inspections may also include checks for radiation safety or dangerous gas or chemical pollutants. When these inspections are done, the results are compared to country or regional standards as well as to manufacturer's specifications. The frequency of safety inspections may be different than planned maintenance and *performance inspections*, and are usually based on regulatory requirements.

Risk-based biomedical equipment management programme

Equipment inclusion criteria have been developed to evaluate each piece of equipmentin use at a hospital or health facility. The following details a modified version of theFennigkoh and Smith model (see reference 6) where a numerical value has beenassigned to each device type by classifying its equipment function, clinical applicationand required maintenance. Adding the number from each subgroup and addingor subtracting a factor based on equipment failure history yields an equipmentmanagement (EM) number.

EM number equation:

EM # = Function # + Application # + Maintenance # + History #

Equipment function

Includes various areas in which therapeutic, diagnostic, analytical and miscellaneousequipment is used.

Category	Function description	Point score
Therapeutic	Life support	10
	Surgical and intensive care	9
	Physical therapy and treatment	8
Diagnostic	Surgical and intensive care monitoring	7
	Additional physiological monitoring and diagnostic	6
Analytical	Analytical laboratory	5
	Laboratory accessories	4
	Computers and related	3
Miscellaneous	Patient related and other	2

Physical risk associated with clinical application

Lists the potential patient or equipment risk during use.

Description of use risk	Point score
Potential patient death	5
Potential patient or operator injury	4
Inappropriate therapy or misdiagnosis	3
Equipment damage	2
No significant identified risk	1

Maintenance requirements

Describes the level and frequency of maintenance required as noted by the manufacturer or through experience.

Maintenance requirement	Point score
Extensive: routine calibration and part replacement required	5
Above-average	4
Average: performance verification and safety testing	3
Below-average	2
Minimal: visual inspection	1

Equipment incident history

Any information available regarding service history that can be considered when evaluating the device type to determine an EM number.

Average equipment failures	Factor
Significant: more than one every 6 months	+2
Moderate: one every 6–9 months	+1
Average: one every 9–18 months	0
Minimal: one every 18–30 months	-1
Insignificant: less than one in the past 30 months	-2

Included devices

All devices with a total EM number of 12 or more will be included in the programmeand scheduled for inspections and preventive maintenance. During the acceptancetesting, any new device will be included in the programme if the device has beenpreviously evaluated and classified for inclusion. If the device has not been previouslyevaluated, a new device classification will be created. It will be evaluated according tothe outlined procedure to

produce an EM number and will be included in the programmeif appropriate. If included, a performance assurance inspection and preventivemaintenance procedure will be written for the new device.

Maintenance interval

The maintenance requirement values are also used to determine the interval betweeneach inspection and maintenance procedure for each device type.

• All devices classified as extensive (characteristic value of 4 or 5) are given apreventive maintenance interval of six months.

• Devices with average or minimal requirements (values of 3, 2 or 1) are scheduledfor preventive maintenance annually.

• Devices with an EM number of 15 or above will be scheduled for inspection at leastevery six months.

• Devices with an EM number of 19 or 20 will be given an inspection interval of fourmonths.

Devices not included in the programme

All patient care-related equipment including therapeutic, monitoring, diagnostic oranalytical equipment not included in the programme, because it did not receive an EMnumber of 12 or above, may still be included in the hospital's biomedical equipmentinventory and be covered on a repair-only basis.

Equipment classification examples

Device description	Equipment function	Clinical application	Maintenance requirement	Incident history	EM #	Class	Inspection frequency
Anaesthesia machine	10	5	5	0	20	I	T
Anaesthesia vaporizer (enflurane/ethrane)	9	5	3	-2	15	I	S
Arthroscopic surgical unit	9	4	2	-2	13	I	A
Breast pump	3	4	3	-2	8	N	-
Aspirator, mobile	8	5	4	-1	16	I	S
Blood warmer	9	4	3	-1	15	I	S
Bone saw	9	4	2	-2	3	I	A
Blood pressure module	7	3	2	0	12	I	A
Camera, video, medical	6	3	3	0	12	I	A
Cast cutter	2	4	3	-2	7	N	-
Cast cutter vacuum	2	2	3	-2	5	N	-
Cardiac output computer	7	3	2	0	12	I	A
Computer, micro (pc)	3	3	1	-2	5	N	-
Cryosurgical unit	9	4	3	-1	15	I	S
Defibrillator/monitor	9	5	4	0	18	I	S
Electrocardiograph, 3-channel	6	3	5	2	16	I	S
Endoscopic video system	6	3	3	0	12	I	A
Electrosurgical unit	9	4	3	0	16	I	S
Fetal monitor	7	3	3	0	13	I	A
Humidifier, heated	8	3	3	1	15	I	S
Hypo/hyperthermia machine	9	4	5	0	18	I	S
Light, surgical portable	2	4	3	-1	8	N	-
Light source, fibre optic	7	3	3	-2	11	N	-
Microscope, ophthalmic slit lamp	6	3	3	-2	10	N	-

Class
I = Included
N = Not included

Inspection frequency
A = Annual T = Three-yearly
S = Semi-annual

Injury Reporting and Documentation

Introduction

Incident reports that describe actual events or “near misses” are an effective way to improve quality and safety for patients and staff. They are key to NZNO’s Healthy Workplaces Strategy.

When an incident occurs, it is important to take the time to fill out an incident report. Incident reports create a record and provide supporting information when you are trying to campaign for change. Reports should be filled out as soon as possible after the incident occurs.

Management should make reports available on the type of incidents that have occurred and what action has been taken to reduce the risks, thus improving the quality of the service.

When should you complete an incident form?

> When there has been an error or omission that has or could potentially have affected patient care (a “near miss”)

> When there has been an incident or accident involving a patient (e.g. a medication error, a fall)

> When nurses consider staffing levels are unsafe on their ward or unit

> When an event has threatened the health and safety of staff, e.g. abusive patients or visitors, or unsafe staffing

> When there has been a serious or sentinel event, i.e. there has been permanent harm or death as a result of an incident

The incident report should include:

> Your name and designation
> The name of the ward/area in which the incident occurred
> Date and time of incident
> The client/patient’s full name and client/patient number
> The events leading up to the incident.
> A description of what you observed.
> Details of observations/recordings taken
> Actions you took in response to the recordings, e.g. rang for a registered nurse (RN) or doctor, or initiated the early warning score protocols

> A list establishing the order and time of what you did for the client/patient, following the incident
> A list of all those notified at the time and what action was taken
> An objective description of contributing factors

Reports should be filled out as soon as possible after the incident, while events are still clear in your mind. This can be very difficult, especially if it has been a serious event, or if you are not familiar with the reporting system (eg electronic) or if you are very tired at the end of a difficult shift. It is important you get support from somebody else on the ward/unit.

Incident reports are part of the quality improvement system, not the client/patient record. Any information recorded in an incident report should also be recorded separately in the client/patient notes.

Staff should always document incidents in a way that would satisfy them, if the staff member or their documentation were to be examined in court. Remember, all information and documentation may be requested if there is an investigation.

Some incident reports (particularly the electronic systems in most district health boards (DHBs) have a field for the staff member to rate the severity of the incident – the Severity Assessment Code or SAC, and to identify contributing factors to the incident. Staff should have been provided with training from the employer on how to do this effectively. This system can take time to use but it is critical that staff report events.

Safe Staffing Incidents

Incidents that should be reported related to nursing or midwifery staffing include:

>not enough staff (number/ratio)

>not enough staff with the right skills (skill mix)

>too many patients with complex needs to be managed safely (care capacity)

The Nursing Council guideline on direction and delegation (www.nursingcouncil.org.nz) requires nurses to report when systems are unsafe. In fact, it is vital to record short staffing, if that was a contributing factor to the incident. The Nursing Council Code of Conduct for Nurses (Standard 8.4) requires nurses to report "...your concerns if you

believe the practice environment is compromising the health and safety of health consumers".

Clause 6 of the DHB/NZNO MECA requires DHBs to involve NZNO delegates in the investigation and resolution of incidents involving short staffing. This cannot happen without

incident reports. Employers and NZNO need information that can be measured, quoted and reported, in order to request change. In aged-care and private providers, staff should seek support from delegates. If a staff member works in a workplace where there are no delegates, s/he should involve their peers or contact NZNO. If staff are concerned incident reports are being ignored in their workplaces, or they are not getting feedback about reports they have written, they should keep a note of the details of the report, including date and time, a summary of the issue and the number of the incident report. Request a meeting with the manager to review the incident reports submitted and the actions that resulted from the reports.

Responsibilities

Department heads, managers and/or supervisors are responsible for:

a. ensuring that all accidents/incidents are properly reported and investigated in accordance with this operating procedure; and
b. ensuring that all corrective actions are promptly and completely carried out.

Employees are responsible for reporting any injury work-related accident to their manager/supervisor as soon as possible. All accidents/incidents must be reported by no later than the end of the employee's regular work shift. (Note: Employees must also complete the appropriate Worker's Compensation forms as soon as possible, normally within 24 hours of the incident pursuant to the Worker's Compensation Section 6.5 of the Employee Handbook.) All injuries resulting in Emergency Medical Services (EMS) response, or treatment by medical personnel, shall be reported immediately to health organization Safety,

The Department shall participate in accident investigations, either directly or by review of the report, as deemed appropriate to the occasion. The Director of health organization Safety shall determine the level of participation that is warranted.

The Office of Human Resources is responsible for administering the Workers' Compensation benefits program for work-related injuries or illnesses.

Director of Environmental Management is responsible for evaluation of incidents to determine if voluntary notifications should be made to outside agencies.

Definitions

Major Accident -- Any injury or illness-related accident that results in:

a. Death;
b. Amputation - the traumatic loss of a limb or other external body part. Amputations include a part, such as a limb or appendage, that has been severed, cut off, amputated

(either completely or partially); fingertip amputations with or without bone loss; medical amputations resulting from irreparable damage; and amputations of body parts that have since been reattached;

c. Loss of consciousness due to electrical shock, lack of oxygen or chemical exposure;
d. Possible permanent functional impairment of a body part (excluding those resulting from a back strain);
e. Admission to a hospital (other than 24-hour observation, hernia repair or back strain).

Notification Procedures

Victims (if possible) and witness (es) of all accidents/incidents are to contact the Department of the organisation Safety.If the incident involves a work-related injury, employees must notify their supervisor or designee immediately upon occurrence of an incident. In the event the employee is not able to report it (e.g., unconscious), any witness employed by the university must notify the Office of Human Resources. (Refer to Section 6.5 of the Employee Handbook.) All injuries resulting in Emergency Medical Services (EMS) response, or treatment by medical personnel, shall be reported immediately to the organization.

University Safety staff will notify the Director of Environmental Management of all work related incidents that result in death, inpatient hospitalization, amputation, or loss of an eye.

Investigation Guidelines

Once notified, the Department of Safety will dispatch a Campus Safety Specialist to the scene. The specialist shall investigate the accident, and document the investigation, as per University Safety guidelines.

Accident Scene -- When possible, the accident scene should be preserved and disturbance of any physical evidence should be prevented until the principal investigator(s) arrive. Unless necessary to prevent further damage or injury, clean up or repair activities should commence only after all pertinent information has been collected.

Appropriate information will be shared with the Office of Human Resources in regard to work related incidents.

References

1. National Council on Compensation Insurance. 2013. Hospital Workers' Compensation Claims for Policy Years 2005–2009.8
2. New Zealand Health and Disability Services Standard NZS 8134:2008 MOH (2008).
3. Communio (2008) New Zealand Incident Management System: A national approach to the management of health care Incidents http://www.communiogroup.com/nzsip/files/publications/FinalPolicyVer1.0.pdf
4. Nursing Council of New Zealand (2012) Code of Conduct for Nurses. Available: www.nursingcouncil.org.nz
5. Check www.nzno.org.nz for further and specific information on other topics related to incident reporting, making statements, the HDC, significant incident reviews etc.
6. http://www.osha.gov/dsg/hospitals
7. www.who.int
8. http://www.nursingworld.org/handlewithcare